

Amendments to the Claims

Please amend the claims as follows:

1. (currently amended) A catalyst system ~~comprising~~ consisting essentially of an ionic liquid dispersed on a porous support having an average pore diameter greater than about 225 Å; wherein said ionic liquid comprises a cation and an anion; and wherein said anion consists ~~essentially~~ of halides of elements selected from the group consisting of: Group 13 (IIIA) metals, zinc, iron ~~and~~, phosphorus, boron, and combinations thereof.

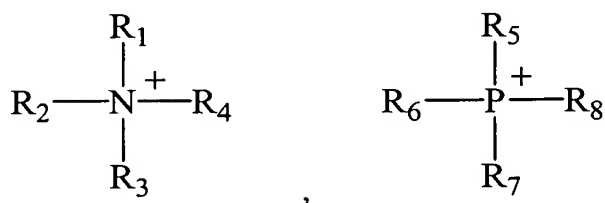
2. (original) A catalyst system in accordance with claim 1 wherein said support has a surface area less than about 700 m²/gram.

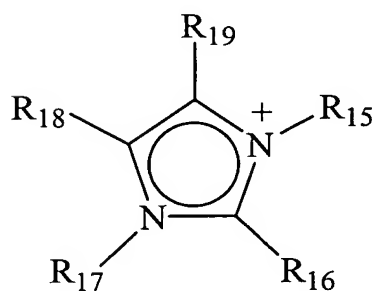
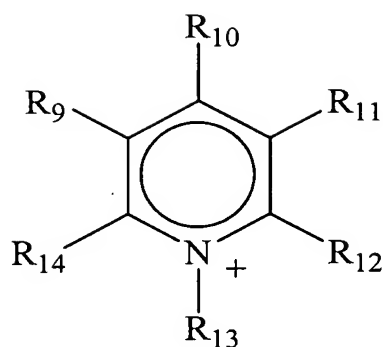
3. (original) A catalyst system in accordance with claim 1 wherein said support is non-crystalline.

4. (currently amended) A catalyst system in accordance with claim 1 wherein said support is non-crystalline and has a surface area less than about 700 m²/gram; ~~and wherein said anion consists of halides of elements selected from the group consisting of: Group 13 (IIIA) metals, zinc, iron, and phosphorus, and combinations thereof.~~

5. (original) A catalyst system in accordance with claim 1 wherein said support is silica.

6. (previously presented) A catalyst system in accordance with claim 1 wherein said cation is selected from the group consisting of ions defined by the formulas:





and combinations of any two or more thereof, wherein:

R₁, R₂, R₃, R₅, R₆, and R₇ are selected from the group consisting of saturated and unsaturated hydrocarbons containing from 1 to 7 carbon atoms per molecule;

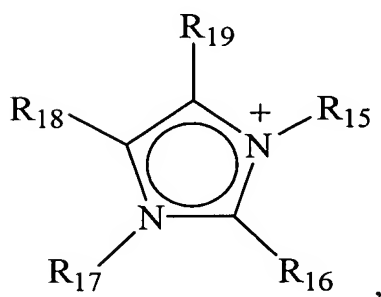
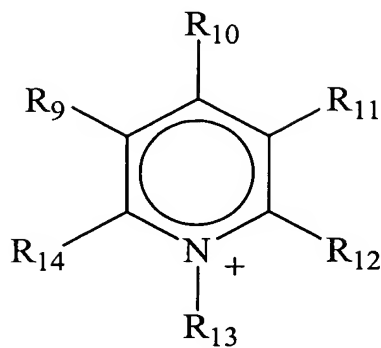
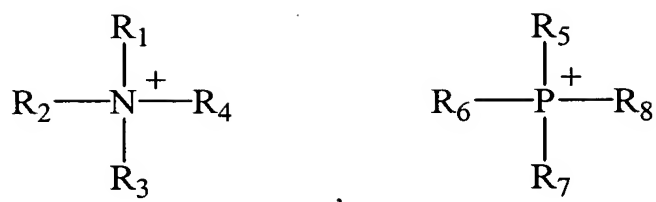
R₄, R₈, R₉, R₁₀, R₁₁, R₁₂, R₁₃, R₁₄, R₁₅, R₁₆, R₁₇, R₁₈, and R₁₉ are selected from the group consisting of saturated and unsaturated hydrocarbons containing from 1 to 7 carbon atoms per molecule, and hydrogen.

7. (previously presented) A catalyst system in accordance with claim 6 wherein said anion is selected from the group consisting of AlCl₄⁻, Al₂Cl₇⁻, Al₃Cl₁₀⁻, GaCl₄⁻, Ga₂Cl₇⁻, Ga₃Cl₁₀⁻, ZnCl₃⁻, FeCl₃⁻, FeCl₄⁻, Fe₃Cl₇⁻, PF₆⁻, and BF₄⁻.

8. (original) A catalyst system in accordance with claim 6 wherein said ionic liquid has the formula R₁R₂R₃NH⁺Al₂Cl₇⁻.

9. (original) A catalyst system in accordance with claim 6 wherein said ionic liquid has the formula (CH₃)₃NH⁺Al₂Cl₇⁻.

10. (currently amended) A catalyst system in accordance with claim 1 wherein a Group 8-10 (~~VIII~~) metal compound is dispersed in said ionic liquid.
11. (currently amended) A catalyst system in accordance with claim 10 wherein said Group 8-10 (~~VIII~~) metal compound comprises a platinum compound.
12. (withdrawn) A process comprising:
- a) contacting, under conversion conditions, a hydrocarbon feed stream comprising a C₅ paraffin and an initiator with a catalyst system comprising an ionic liquid dispersed on a support; and
 - b) withdrawing a product stream comprising a C₄ paraffin and at least one C₆ paraffin.
13. (withdrawn) A process in accordance with claim 12 wherein said support has an average pore diameter greater than about 225 Å.
14. (withdrawn) A process in accordance with claim 12 wherein said support has a surface area less than about 700 m²/gram.
15. (withdrawn) A process in accordance with claim 12 wherein said support is non-crystalline.
16. (withdrawn) A process in accordance with claim 12 wherein said support is non-crystalline, has an average pore diameter greater than about 225 Å, and has a surface area less than about 700 m²/gram.
17. (withdrawn) A process in accordance with claim 12 wherein said support is silica.
18. (withdrawn) A process in accordance with claim 12 wherein said ionic liquid comprises a cation and an anion; wherein said cation is selected from the group consisting of ions defined by the formulas:



and combinations of any two or more thereof, wherein:

R_1 , R_2 , R_3 , R_5 , R_6 , and R_7 are selected from saturated and unsaturated hydrocarbons containing from 1 to 7 carbon atoms per molecule;

R_4 , R_8 , R_9 , R_{10} , R_{11} , R_{12} , R_{13} , R_{14} , R_{15} , R_{16} , R_{17} , R_{18} , and R_{19} are selected from saturated and unsaturated hydrocarbons containing from 1 to 7 carbon atoms per molecule, and hydrogen; and

wherein said anion is selected from the group consisting of halides of: Group IIIA metals, copper, zinc, iron and phosphorus.

19. (withdrawn) A process in accordance with claim 18 wherein said anion is selected from the groups consisting of AlCl_4^- , Al_2Cl_7^- , $\text{Al}_3\text{Cl}_{10}^-$, GaCl_4^- , Ga_2Cl_7^- , $\text{Ga}_3\text{Cl}_{10}^-$, CuCl_2^- , Cu_2Cl_3^- , Cu_3Cl_4^- , ZnCl_3^- , FeCl_3^- , FeCl_4^- , Fe_3Cl_7^- , PF_6^- , and BF_4^- .

20. (withdrawn) A process in accordance with claim 18 wherein said ionic liquid has the formula $\text{R}_1\text{R}_2\text{R}_3\text{NH}^+\text{Al}_2\text{Cl}_7^-$.

21. (withdrawn) A process in accordance with claim 18 wherein said ionic liquid has the formula $(\text{CH}_3)_3\text{NH}^+\text{Al}_2\text{Cl}_7^-$.

22. (withdrawn) A process in accordance with claim 12 wherein said hydrocarbon feed stream comprises at least 50 weight-% isopentane, based on the total weight of said hydrocarbon feed stream.

23. (withdrawn) A process in accordance with claim 12 wherein said hydrocarbon feed stream comprises in the range of from about 50 to about 95 weight-% isopentane, based on the total weight of said hydrocarbon feed stream.

24. (withdrawn) A process in accordance with claim 12 wherein said hydrocarbon feed stream comprises in the range of from about 80 to about 98.5 weight-% isopentane, based on the total weight of said hydrocarbon feed stream.

25. (withdrawn) A process in accordance with claim 12 wherein said conversion conditions include a temperature in the range of from about 100°F to about 1000°F.

26. (withdrawn) A process in accordance with claim 12 wherein said conversion conditions include a temperature in the range of from about 140°F to about 250°F.

27. (withdrawn) A process in accordance with claim 12 wherein said conversion conditions include a temperature in the range of from about 150°F to about 220°F.

28. (withdrawn) A process in accordance with claim 12 wherein said C₄ paraffin of said product stream is isobutane and said C₆ paraffin of said product stream is a hexane isomer.

29. (withdrawn) A process in accordance with claim 12 wherein said initiator is selected from the group consisting of: 1) an olefin having in the range of from 2 to 20 carbon atoms per molecule, 2) an alkyl halide wherein said alkyl halide has in the range of from 2 to 20 carbon atoms per molecule, and combinations thereof.